Contents

- Sea Lice
  - Management Strategy
  - Monitoring Results UPDATED
  - Management Strategy Review 03/04 NEW!
  - Sea Lice Identification Workshop
  - FAQ
- Fish Health Index
- Fisheries & Aquaculture Homepage

Broughton Archipelago Sea Lice Action Plan

NEW! Fish Production and Fallowing in the Broughton Archipelago Area (18.0kb) .pdf

- Overview
- Methodology
  - Industry Monitoring Program Data (Jan-Mar)
  - Industry Monitoring Program Data (April to July)
- MAFF Sea Lice Monitoring and Auditing Program
- Related Links

Overview

In 2002, concern was expressed that a low return of pink salmon was the result of infestation by sea lice (*Lepeophtheirus salmonis)* during the Spring 2001 out-migration of their year-class from the Broughton Archipelago.

In February 2003, the Ministry of Agriculture Food and Fisheries committed to establish an Interim Sea Lice Monitoring program for salmon farms in the Broughton Archipelago. The objective was to gather information on the levels of sea lice on farms and work with the industry to develop management actions to minimize the levels of lice during the migration of wild salmon smolts, including pink salmon.

The province was sharing information with the Department of Fisheries and Oceans in order to coordinate monitoring and research activities aimed at protecting wild salmon in the Broughton.

The program was designed to establish standardized monitoring for the companies in the area and to audit that program through on-site farm visits. The latter included independent examination and enumeration of lice levels on fish by ministry fish health technicians at randomly selected farms.

Management actions used to control lice levels include fallowing single year class sites, harvesting and treatment.

- Fallow Route for Pink Salmon Migration in the Broughton Archipelago (jpg)

- Pink Salmon Returns Even Brood Years .pdf UPDATED

Top

Methodology

Historical information from the industry's existing monitoring program was provided to MAFF to inform management actions to control lice on farms prior to and during the spring smolt migration period from April though June.

The Monitoring program included 16 farms from the Broughton Archipelago. Of these, 14 farms containing fish or smolts were evaluated for sea lice. Sampling was conducted at least once per month until March at which time sampling increased to once every two weeks as per the new condition of licence. Sampling was conducted in three cages per site with a minimum of 20 fish per pen examined. The historical data provided is based on sample size of approximately 2,200 fish.

The numbers of motile and gravid lice were enumerated on each fish.

- Gravid lice are mature female lice with eggs which when released may survive and potentially develop into copepods that are infectious to salmon. Counts of gravid lice provide an indication of the level of potential infection.
- Motile lice includes gravid female lice as well as all other grazing mobile lice on the fish. Counting motile lice is an indicator of developing lice loads and provides information used in decisions on the treatment and control of lice levels.

Controlling the overall lice populations through harvesting or treatment was expected to reduce the number of gravid lice and thus cut lice loads on the whole.

The average number of motile and gravid lice per fish was calculated for different size classes of fish from January through March. The results and the number of farms containing the size class categories is presented in the following tables.

· Top

Industry Monitoring Program Data (Jan-Mar)

The following are the historical data provided to the Ministry of Agriculture, Food and Fisheries by industry as part of the Interim Monitoring Protocol.

Table 1: Average Number of Gravid Lice

	January	February	March
Farm	1.67	2.19	1.14
500 grams	0.03	0.08	0.02
2-3 kgs	1.45	1.01	0.04
7+ kgs	4.45	4.66	2.92

Table 2: Average Number of Motile Lice

	January	February	March

Farm	4.31	5.52	3.66
500 grams	0.60	0.90	0.71
2-3 kgs	4.74	3.26	0.19
7+ kgs	9.22	10.68	8.69

· Top

Industry Monitoring Program Data (April to July)

As anticipated the numbers of both gravid and motile lice levels decreased.

Table 1: Average Number of Gravid Lice

	April	May	June
Farm	0.930	0.120	0.083
500 grams	0.110	0.080	0.038
2-3 kgs	0.050	0.003	0.017
7+ kgs	2.690	0.450	0.330

Table 2: Average Number of Motile Lice

	April	May	June
Farm	2.27	0.62	0.36
500 grams	0.96	0.73	0.40
2-3 kgs	0.15	0.07	0.13
7+ kgs	5.85	0.96	0.50

· Top

MAFF Sea Lice Monitoring and Auditing Program

Methodology

As part of the Interim Sea Lice Monitoring Program for the Broughton Archipelago, Ministry of Agriculture, Food and Fisheries fish health staff carried out randomly selected farm audits. Approximately 25 per cent of the industry sites are sampled every two weeks. All sampling was coordinated with the companies to ensure that it was conducted at the same time as ongoing sea lice monitoring to avoid duplication and undue stress on fish.

Audits until March 31 were conducted on four farms. The audits confirmed lice loads reported by industry were consistent with those found in the independent audit sampling.

As per the Interim Agreement the following are the results of the lice sampling conducted every two weeks on eight randomly selected farm sites in the Broughton Area.

Table 1: Audit Data: Bi-weekly Averages

	March		April		May		June	
	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30
Gravid	4.40	0.00	0.27	1.74	0.02	0.01	0.02	0.04
Motile	15.81	0.98	1.34	5.54	0.65	0.54	0.28	0.29

· Top

Links

- DFO Pink Salmon Action Plan - Weekly Results
- Studies of early marine survival of Pacific Salmon and sea lice occurrence in Queen Charlotte Strait in 2001 pdf

Updated: January 13, 2005

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Figure 3. Area 12 Mainland Inlet Pink Salmon Escapement (Even Year Cycle)